

acm Transactions on Mathematical Software

Volume 19 • 1993

Editor-in-Chief

Ronald F. Boisvert

Algorithms Editor

Robert J. Renka

Associate Editors

Bob F. Caviness
W. Enright
R. J. Fateman
Patrick Gaffney
James E. Gentle
William Gropp
Richard J. Hanson

D. S. Johnson
Roy E. Marsten
J. L. Nazareth
John Reid
John R. Rice
Michael A. Saunders
Hans J. Stetter

Published by the Association for Computing Machinery

Copyright 1994 Association for Computing Machinery
1515 Broadway, New York, NY 10036

135 **Boisvert, R. F.** Editorial. No. 2 (June 1993), 135–136.

Corrigenda: Algorithm 713. No. 1 (March 1993), 131. Algorithm 725. No. 4 (Dec. 1993), 546.

Research Articles

474 **Abernathy, R. W., and Smith, R. P.** Applying Series Expansion to the Inverse Beta Distribution to Find Percentiles of the F-Distribution. No. 4 (Dec. 1993), 474–480.

202 **Bai, Z., Demmel, J., and McKenney, A.** On Computing Condition Numbers to the Nonsymmetric Eigenproblem. No. 2 (June 1993), 202–223.

265 **Bentley, J. L., Fernandez, M. F., Kernighan, B. W., and Schryer, N. L.** Template-Driven Interfaces for Numerical Subroutines. No. 3 (Sept. 1993), 285–287.

419 **Chang, S. F., and McCormick, S. T.** Implementation and Computational Results for the Hierarchical Algorithm for Making Sparse Matrices Sparser. No. 3 (Sept. 1993), 419–441.

63 **Cash, J. R., and Semnani, S.** A Modified Adams Method for NonStiff and Mildly Stiff Initial Value Problems. No. 1 (March 1993), 63–80.

160 **Demmel, J. W., and Kågström, B.** The Generalized Schur Decomposition of an Arbitrary Pencil $A - \lambda B$: Robust Software with Error Bounds and Applications. Part I: Theory and Algorithms. No. 2 (June 1993), 160–174.

175 **Demmel, J. W., and Kågström, B.** The Generalized Schur Decomposition of an Arbitrary Pencil $A - \lambda B$: Robust Software with Error Bounds and Applications. Part II: Software and Applications. No. 2 (June 1993), 175–201.

202 **Demmel, J.** See Bai, Z. No. 2 (June 1993), 202–223.

489 **Derflinger, G.** See Hörmann, W. No. 4 (Dec. 1993), 489–495.

457 **Dessa, C.** See Ribbens, C. J. No. 4 (Dec. 1993), 457–473.

509 **Du, D.-Z.** See Khoury, B. N. No. 4 (Dec. 1993), 509–522.

137 **Duff, I. S., and Scott, J. A.** Computing Selected Eigenvalues of Sparse Unsymmetric Matrices Using Subspace Iteration. No. 2 (June 1993), 137–159.

333 **Duffy, D. G.** On the Numerical Inversion of Laplace Transforms: Comparison of Three New Methods on Characteristic Problems from Applications. No. 3 (Sept. 1993), 333–359.

44 **Enright, W. H.** See Kamel, M. S. No. 1 (March 1993), 44–62.

265 **Fernandez, M. F.** See Bentley, J. L. No. 3 (Sept. 1993), 265–287.

257 **Fishman, G. S., and Yarberry, S.** Generating a Sample from a k -Cell Table with Changing Probabilities in $O(\log_2 k)$ Time. No. 2 (June 1993), 257–261.

- 360 **Fulton, C. T.** See Pruess, S. No. 3 (Sept. 1993), 360-376.
- 233 **Greenberg, H. J.** Enhancements of ANALYZE: A Computer-Assisted Analysis System for Linear Programming. No. 2 (June 1993), 233-256.
- 496 **Grassmann, W. K.** Rounding Errors in Certain Algorithms Involving Markov Chains. No. 4 (Dec. 1993), 496-508.
- 407 **Haag, J. B., and Watkins, D. S.** QR-Like Algorithms for the Nonsymmetric Eigenvalue Problem. No. 3 (Sept. 1993), 407-418.
- 489 **Hörmann, W., and Derflinger, G.** A Portable Random Number Generator Well Suited for the Rejection Method. No. 4 (Dec. 1993), 489-495.
- 523 **Joe, S., and Sloan, I. H.** Implementation of a Lattice Method for Numerical Multiple Integration. No. 4 (Dec. 1993), 523-545.
- 160 **Kågström, B.** See Demmel, J. No. 2 (June 1993), 160-174.
- 175 **Kågström, B.** See Demmel, J. No. 2 (June 1993), 175-201.
- 44 **Kamel, M. S., Ma, K. S., and Enright, W. H.** ODEXPERT: An Expert System to Select Numerical Solvers for Initial Value ODE Solvers. No. 1 (March 1993), 44-62.
- 265 **Kernighan, B. W.** See Bentley, J. L. No. 3 (Sept. 1993), 265-287.
- 509 **Khoury, B. N., Pardalos, P. M., and Du, D.-Z.** A Test Problem Generator for the Steiner Problem in Graphs. No. 4 (Dec. 1993), 509-522.
- 44 **Ma, K. S.** See Kamel, M. S. No. 1 (March 1993), 44-62.
- 202 **McKenney, A.** See Bai, Z. No. 2 (June 1993), 202-223.
- 509 **Pardalos, P. M.** See Khoury, B. N. No. 4 (Dec. 1993), 509-522.
- 360 **Pruess, S., and Fulton, C. T.** Mathematical Software for Sturm-Liouville Problems. No. 3 (Sept. 1993), 360-376.
- 457 **Ribbens, C. J., Watson, L. T., and Desa, C.** Toward Parallel Mathematical Software for Elliptic Partial Differential Equations. No. 4 (Dec. 1993), 457-473.
- 265 **Schryer, N. L.** See Bentley, J. L. No. 3 (Sept. 1993), 265-287.
- 137 **Scott, J. A.** See Duff, I. S. (June 1993), 137-159.
- 63 **Semnani, S.** See Cash, J. R. No. 1 (March 1993), 63-80.
- 377 **Shirts, R. B.** The Computation of Eigenvalues and Solutions of Mathieu's Differential Equation for Noninteger Order. No. 3 (Sept. 1993), 377-390.
- 523 **Sloan, I. H.** See Joe, S. No. 4 (Dec. 1993), 523-545.
- 474 **Smith, R. P.** See Abernathy, R. W. No. 4 (Dec. 1993), 474-480.
- 95 **Snow, D. M.** Computing Tensor Product Decompositions. No. 1 (March 1993), 95-108.
- 407 **Watkins, D. S.** See Haag, J. B. No. 3 (Sept. 1993), 407-418.
- 457 **Watson, L. T.** See Ribbens, C. J. No. 4 (Dec. 1993), 457-473.
- 33 **Wu, T.** An Accurate Computation of the Hypergeometric Distribution Function. No. 1 (March 1993), 33-43.
- 257 **Yarberry, S.** See Fishman, G. S. No. 2 (June 1993), 257-261.

Algorithms

- 481 **Abernathy, R. W., and Smith, R. P.** Algorithm 724: Program to Calculate F Percentiles. No. 4 (Dec. 1993), 481-483.
- 288 **Bailey, D. H.** Algorithm 719: Multiprecision Translation and Execution of FORTRAN Programs. No. 3 (Sept. 1993), 288-319.
- 320 **Berntsen, J., Cools, R., and Espelid, T. O.** Algorithm 720: An Algorithm for Adaptive Cubature Over a Collection of 3-Dimensional Simplices. No. 3 (June 1993), 320-332.
- 131 **Boisvert, R. F., and Saunders, B. V.** Algorithm 713: Portable Vectorized Software for Bessel Function Evaluation. No. 1 (March 1993), 131.
- 109 **Bunch, D. S., Gay, D. M., and Welsch, R. E.** Algorithm 717: Subroutines for Maximum Likelihood and Quasi-Likelihood Estimation of Parameters in Nonlinear Regression Models. No. 1 (March 1993), 109-130.
- 484 **Clarkson, D. B., Fan, Y.-A., and Joe, H.** A Remark on Algorithm 643: FEXACT: An Algorithm for Performing Fisher's Exact Test in $r \times c$ Contingency Tables. No. 4 (Dec. 1993), 484-488.
- 1 **Cody, W. J.** Algorithm 714: CELEFUNT—A Portable Test Package for Complex Elementary Functions. No. 1 (March 1993), 1-21.
- 22 **Cody, W. J.** Algorithm 715: SPECFUN—A Portable FORTRAN Package of Special Function Routines and Test Drivers. No. 1 (March 1993), 22-32.
- 443 **Cody, W. J., and Coonen, J. T.** Algorithm 722: Functions to Support the IEEE Standard for Binary Floating-Point Arithmetic. No. 4 (Dec. 1993), 443-451.

- 320 Cools, R. See Berntsen, J. No. 3 (Sept. 1993), 320-332.
- 443 Coonen, J. T. See Cody, W. T. No. 4 (Dec. 1993), 443-451.
- 546 Drezner, Z. Algorithm 725: Computation of the Multivariate Normal Integral (Corrigendum). No. 4 (Dec.), 546.
- 320 Espelid, T. O. See Berntsen, J. No. 3 (Sept. 1993), 320-332.
- 484 Fan, Y.-A. See Clarkson, D. B. No. 4 (Dec. 1993), 484-488.
- 109 Gay, D. M. See Bunch, D. S. No. 1 (March 1993), 109-130.
- 484 Joe, H. See Clarkson, D. B. No. 4 (Dec. 1993), 484-488.
- 224 Miminis, G., and Reid, M. Algorithm 718: A FORTRAN Subroutine to Solve the Eigenvalue Allocation Problem for Single-Input Systems. No. 2 (June 1993), 224-232.
- 224 Reid, M. See Miminis, G. No. 2 (June 1993), 224-232.
- 81 Renka, R. J. Algorithm 716: TSPACK: Tension Spline Curve-Fitting Package. No. 1 (March 1993), 81-94.
- 131 Saunders, B. V. See Boisvert, R. F. No. 1 (March 1993), 131.
- 391 Shirts, R. B. Algorithm 721: MTIEU1 and MTIEU2: Two Subroutines to Compute Eigenvalues and Solutions to Mathieu's Differential Equation for Noninteger and Integer Order. No. 3 (Sept. 1993), 391-406.
- 474 Smith, R. P. See Abernathy, R. W. No. 4 (Dec. 1993), 474-480.
- 452 Van Snyder, W. Algorithm 723: Fresnel Integrals. No. 4 (Dec. 1993), 452-456.
- 109 Welsch, R. E. See Bunch, D. S. No. 1 (March 1993), 109-130.